Patent claims

1.   A method for controlling the transmitting power in a radio
     communications system by using a control system consisting
5    of an inner control loop and an outer control loop,
     characterized in that
     -   the transmitting power of a subscriber station (UE)
         and/or a base station (NB) is varied by means of an inner
         control loop constructed for fast transmitting power
10       control within a transmitting power interval (Pint)
         predetermined by an outer control loop constructed for
         slow transmitting power control, and in that
     -   the slow transmitting power control is in each case
         performed in the base station (NB) by means of the outer
15       control loop, which only exists there, both for the
         uplink (UL) from a subscriber station (UE) to a base
         station (NB) and for the downlink (DL) from the base
         station (NB) to the subscriber station (UE).

20   2.   The method as claimed in claim 1, characterized in that the
          transmitting power interval (Pint) is defined by a maximum
          transmitting power (Pmax) and a minimum transmitting power
          (Pmin).

25   3.   The method as claimed in claim 1 or 2, characterized in that
          the transmitting power interval (Pint) is defined
          individually for the subscriber station (UE) and/or for the
          base station (NB).

30   4.   The method as claimed in a preceding claim,

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characterized in that transmitting power intervals (Pint) of a number of subscriber stations (UE) which have set up connections in parallel in the same frequency band (B) and/or in the same timeslot (ts), are dimensioned in such a

5       manner that a predetermined dynamic range of a receiving device of the base station (NB) is not exceeded.

5.      The method as claimed in a preceding claim, characterized in that the base station (NB) signals to the subscriber station (UE) the transmitting power interval (Pint) or the maximum transmitting power (Pmax) and the minimum transmitting power (Pmin) for the signal transmission in the uplink (UL).

6.      The method as claimed in a preceding claim, characterized in
15      that the transmitting power interval (Pint) is dimensioned in dependence on a service transmitted over the link between the base station (NB) and the subscriber station (NB).

7.      The method as claimed in a preceding claim, characterized in
20      that the transmitting power interval (Pint) is dimensioned in dependence on a speed (V) of the subscriber station (UE).

8.      The method as claimed in a preceding claim, characterized in that the transmitting power interval (Pint) is progressively
25      reduced with increasing speed (V) of the subscriber station (UE).

9.      The method as claimed in claim 7 or 8, characterized in that the speed (V) of the subscriber station (UE) is estimated
30      from

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measurements

with respect to a variation of transmission characteristics of the radio interface, the transmission characteristics being determined by means of a characteristic value (BER).

5    10.    The method as claimed in the preceding claim, characterized in that a bit error rate, a time frame error rate, a path attenuation and/or an interference at the location of the subscriber station (UE) is determined as the characteristic value (BER) for the transmission characteristics.

11.    The method as claimed in claim 9 or 10, characterized in that the variation of the characteristic value (BER) of a signaling channel (BCCH) transmitted with constant transmitting power by the base station (NB) is determined in
15          the subscriber station (UE).

12.    The method as claimed in one of claims 9 to 11, characterized in that the characteristic value (BER) is averaged over a particular time interval and the averaged
20          characteristic value (BERavg) is taken into consideration for the dimensioning of the transmitting power interval (Pint).

13.    The method as claimed in the preceding claim, characterized
25          in that the time interval for averaging corresponds to a periodicity of the slow transmitting power control in the outer control loop.

14.    The method as claimed in one of claims 9 to 13,
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characterized in that an updating of the dimensioning of the transmitting power interval (Pint) is initiated when the variation of the transmission characteristics of the radio interface determined drops below a predetermined threshold

5       value.

15.     The method as claimed in a preceding claim, characterized in that the fast and/or slow transmitting power control for the uplink (UL) and/or for the downlink (DL) are based on the

10      determination of a carrier/interference ratio (CIR).

16.     The method as claimed in one of claims 9 to 15, characterized in that the characteristic value (BER) determined is compared with a target BER in the outer

15      control loop and a difference (dBER) between the values is calculated.

17.     The method as claimed in the preceding claim, characterized in that the difference (dBER) between the characteristic

20      value (BER) determined and the target BER is weighted by a weighting factor (g).

18.     The method as claimed in the preceding claim, characterized in that the weighted difference (dCIR) is added to a target

25      CIR(i) of a preceding control interval (i) from which the current target CIR, CIR(i+1) for the current control interval (i+1) is determined.

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19.    The method as claimed in the preceding claim, characterized
       in that the outer control loop for the subscriber station
       (UE) is also implemented in the base station (NB), in which
       arrangement an in each case current target CIR is generated
       in the outer control loop from a current characteristic
       value (BER) determined by the subscriber station (UE) and
       signaled to the base station (NB), and is signaled to the
       subscriber station (UE).

10    20.    The method as claimed in a preceding claim, characterized in
       that the radio communications system supports a TDD
       transmission method.

      21.    The method as claimed in one of claims 1 to 19,
15           characterized in that the radio communications system
       supports an FDD transmission method.

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